Remarks

In the Examiner's Office Action, the Examiner has rejected the independent claims and some dependent claims based upon the Piety patent, and rejected the remaining dependent claims based upon Piety in combination with Van Voorhis. Applicant submits that the claims are patentable over these references.

This application relates to a data collector having both a vibration sensor and an integral optical system, which are usable together in collecting data. As one example, noted at page 14, lines 14-19, the speed of rotation of a machine may be optically measured by a laser tachometer, while simultaneously vibration signals are collected, and both are stored by the data collector. In such an embodiment, the speed and vibration data may then be used, together, for predictive maintenance purposes, for example by performing an "order tracking" analysis of vibration data (essentially, normalizing collected vibration frequencies, based upon the speed of rotation of the machine).

The Piety patent discloses a data collector with two sensors, and discusses the possibility that each might be a vibration sensor or might be a "bar code reader". Piety explains the use of a bar code reader at col. 6 lines 39-67 - the bar code reader would read bar coded information from a bar code on a

machine, including for example a machine identification or machine set-up information or pre-stored measurement data. This data is read by the bar code reader and, for example, used to set up vibration or other measurements.

The Piety patent is thus substantially different than the claims at issue in this application. The Piety patent does not describe a system in which a vibration sensor and optical system, in a common housing, are used together to collect real time data, for machinery maintenance purposes. Rather, at best, Piety describes a device in which an optical system and vibration sensor are used at different times, and further, the optical system may only be used to set up the vibration sensor.

Thus, in no sense does Piety describe, as claimed, a system

> simultaneously receiving, storing or processing [a] digitized vibration signal and [a] digital signal converted from [] received light, in real time, for the purpose of predictive maintenance

(claim 1) or, a method including the step of

> simultaneously receiving, storing or processing [a] digitized vibration signal and [a] digital signal converted from said received light

(claim 13).

The other reference used by the Examiner, Van Voorhis, does nothing to suggest vibration and optical sensors, usable together. Van Voorhis merely shows a laser light tachometer. It contains no suggestion of a single device having both a tachometer (or any other optical device) and a vibration sensor. Van Voorhis is simply silent on such matters.

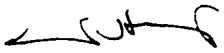
As noted in the background, page 3, liens 8-20, prior art devices such as Piety and Van Voorhis suffer disadvantages in practical use. With the benefit of the present invention, these disadvantages are avoided: a technician is not forced to hold or manage, separately, a tachometer, accelerometer and data collector, to collect predictive maintenance data involving both speed and vibration. The present invention allows a technician to use a single device to collect vibration data such as from an accelerometer, as well as simultaneously collect optical data (such as rotation speed).

Applicant thus submits that the present claims are patentable over the references cited by the Examiner, and requests issuance of a Notice of Allowability.

This paper is believed to be timely. However, if any petition for extension of time is necessary to accompany this communication, please consider this paper a petition for such an extension of time, and apply the appropriate extension of time fee to Deposit Account 23-3000. If any other charges or credits

are necessary to complete this communication, please apply them to Deposit Account 23-3000.

Respectfully submitted,



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Version With Markings to Show Changes Made

1. A data collector, comprising

a housing,

a vibration signal input on said housing,

an analog to digital converter within said housing connected to said vibration signal input, converting a vibration signal received at said vibration signal input to a digitized vibration signal,

an optical system within said housing, said optical system receiving light from outside said housing,

a receiver circuit converting said received light to a digital signal, and

a digital signal processing circuit connected to said analog to digital converter and said receiver circuit, and simultaneously receiving, storing or processing said digitized vibration signal [and/or] and said digital signal converted from said received light, in real time, for the purpose of predictive maintenance.

13. A method of collecting data for the purpose of predictive maintenance using a data collector, comprising

receiving a vibration signal into a housing of said data collector, and converting said a vibration signal to a digitized vibration signal withing said housing,

receiving light from outside said housing into said housing, and converting said received light to a digital signal, and

simultaneously receiving, storing or processing said digitized vibration signal [and/or] and said digital signal converted from said received light.